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Inside Wallops

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X-34 Fastrac Engine Passes Critical Tests

A critical series of tests on a rocket engine that could power the next generation of space launch vehicles has been successfully completed at the Marshall Space Flight Center.

The Fastrac engine — only the second American made engine developed in the last 25 years — will be the primary propulsion system for the X-34 technology demonstration vehicle scheduled to begin flight tests in late 1998.

X-34 is next in NASA's series of Reusable Launch Vehicle (RLV) technology demonstrators set for up to 25 flights beginning late next year.

X-34, an air-launched vehicle being developed under contract to Orbital Sciences Corporation, is intended to demonstrate technologies ranging from composite structures and reusable propellant tanks and insulation to advanced thermal protection systems and low-cost avionics.

The Mach-8 (eight times the speed of sound) craft will begin flights at the White Sands Missile Range and could include missions through inclement weather conditions in Florida, as well. X-34 demonstrations will precede the more advanced X-33 technology demonstrator scheduled to begin flights up to Mach 15 in mid-1999.

A major goal of NASA's RLV efforts is to reduce dramatically the cost of putting payloads into space.

Recently completed Fastrac engine component tests evaluated the engine's thrust chamber assembly at high pressure almost identical to flight conditions. The primary combustion of propellants — a mixture of liquid oxygen and kerosene — occurs in the thrust chamber assembly. As the engine heats, the chamber is cooled by charring or scorching a liner inside the chamber that decomposes to prevent excessive heat buildup.

Each Fastrac engine initially will cost approximately $1 million — about one-fourth of the cost of similar engines.

The Fastrac provides 60,000 pounds of thrust and, in addition to the X-34 vehicle, is targeted for launch systems designed to boost payloads weighing up to 500 pounds at a dramatically lower cost.

New Manufacturing Method Could Lower Air Travel Costs

NASA and Boeing recently demonstrated a new composites manufacturing method, using an advanced NASA-developed stitching machine, that is expected to have a major impact on the way aircraft wing structures are fabricated.

The demonstration took place in Huntington Beach, CA, at the new Boeing Stitched Composites Development Center.

By replacing large metal structures on airplanes with composite materials, the aeronautics industry expects to achieve large savings on weight and production that should translate directly into lower airfares for the public in the near future.

Composite wing structures are expected to cost less and weigh less than aluminum wings while remaining as damage tolerant and carrying the same loads from weight and pressure. Part of the weight and time savings come from the elimination of many of the 80,000 metal fasteners found on an aluminum wing.

"The untrained eye would only see a normal wing because it's coated in polyurethane paint," said Marvin Dow, a retiree from NASA's Langley Research Center whose materials research led to the naming of the stitching facility after him. "But if you were an expert you'd notice the lack of rivet heads on the outside of the wing."

The stitching machine sews together pre-cut knitted fabric layers at a rate of 3,200 stitches per minute, forming the shape of the wing. After the fabric pieces are stitched together, the machine sews on braided stiffener materials to add to the wing's strength. Once stitching is complete, the still flexible wing is set with resin using a resin film infusion process.

Wallops News Shorts

.....The Request for Proposals (RFP) for services for the implementation of NASA Balloon Flight Program was issued August 6. The deadline for proposals is September 22. The RFP can be found at:

http://procurement.nasa.gov/EPS/GSFC/Synopsis/DRFPS5-10257-615/sol.html#Solicitation

.....We're stumped! Do you have an idea for a title for the new Code 800 organization? If so, send it to the Public Affairs Office, Bldg. F-6, Rm. 108.

.....A Black Brant IX sounding rocket carrying a solar physics payload for the University of Southern California was successfully launched August 11 from the White Sands Missile Range. The payload was recovered. The principal investigator was Dr. Darrell Judge and the payload manager was Frank Lau.

.....Two scientific balloons were launched August 13 and 14 from the National Scientific Balloon Facility, Palestine. The first balloon carried an infrared astronomy payload for Dr. Andrew Lange from the California Institute of Technology. The balloon failed during ascent. The payload was recovered. The second mission was a reimbursable flight for the Jet Propulsion Laboratory. The data transmitter failed during ascent. The payload was recovered.

Logo Contest

All rough draft entries received in the Mission 2000 Logo Contest will be on display in the cafeteria, Wednesday, August 20 from 11 a.m. to 1 p.m..

Employees will be allowed to choose four in the first vote. Votes should be based on content and association with Wallops Mission 2000 rather than artistic quality.

A final vote for the winning logo will be held in September.

Breaking News .....

The Wallops Flight Facility is providing support to the Maryland Department of Natural Resources in the research into the recent fish kills and incidences of fish with lesions in the Pocomoke River. Personnel from Wallops installed a portable weather station in Shelltown, MD, August 15. More in the next issue of **Inside Wallops.**

Tips for More Comfortable Air Travel

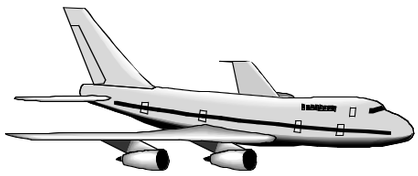
Although the U.S. airline system is the safest in the world, emergencies do occur. The Federal Aviation Administration suggests that you put as much thought into the clothes you wear to the airport as what you put in your suitcase. Here are a few things to consider before your next flight:

- Dress casually. No skirts or tight-fitting clothes. Wear laced shoes and keep them on during takeoff and landing.

- Wear natural fibers. Synthetic clothing, including pantyhose, can burn right through the skin if you have to slide down the emergency chute.

- Avoid necklaces, ties or any objects that dangle.

- Wear bright colors. If an emergency occurs, you will be more visible to rescue workers.



How's the air out there?

Because the outside air would not sustain life, cabin atmosphere must be more or less manufactured. Modern jets recycle air, filtering it to remove dust and microbes and adding fresh, heated air. However, the harder the ventilation system works, the more fuel the plane uses.

Airlines and passengers may differ on how much fuel should be budgeted for ventilation. To counteract some of the side effects and discomforts of flying, follow these tips:

- Drink plenty of fluids before, during and after flying. Avoid alcohol and caffeine drinks.

- If your nasal passages tend to be dry, carry and use a nasal spray.

- If your ears clog up during descent and landing, yawn, chew gum and/or try the Valsalva maneuver: hold your nose, keep your mouth closed and try to blow out with a few short breaths. Your ears should pop slightly, and the discomfort should ease. A decongestant pill, taken at least one hour before landing also may be helpful.

- Wear glasses rather than contact lenses. If you do wear contact lenses, use lubricating drops frequently

- Get up and walk at every opportunity.

- Avoid overeating just before flying.

Norwegian Range Celebrates 35 Years

The Andoya Rocket Range, Norway, will celebrate its 35th anniversary August 18. The first sounding rocket, a Nike-Cajun, launched from Andoya was on August 18, 1962. Ferdinand I was a Norwegian/Danish project.

The first NASA sounding rocket, Ferdinand III, launched from Andoya also was a Nike-Cajun and was launched on Dec. 11, 1962. Since then, over 100 NASA sounding rockets have been launched from the Andoya Rocket Range.

Bobby Flowers, Program Management Division, is attending ceremonies in Norway and will present a plaque from Wallops to the Andoya Range. The inscription on the plaque has a picture of a Nike-Cajun and reads:

35TH ANNIVERSARY
ANDOYA ROCKET RANGE
AUGUST 18, 1997

IN COMMEMORATION
OF THE FIRST
NASA SOUNDING ROCKET
LAUNCH FROM NORWAY
FERDINAND III
DECEMBER 11, 1962

From Salisbury to Wallops. Contact Charlie, x1239.

Body Facts

- Your brain weighs about three pounds, is a pinkish-gray color and is about the size of a cauliflower.

- It may seem that a headache causes your brain to hurt, but actually brain tissue contains no sensory nerves -- it is immune to pain.

- Rate of nail growth varies from person to person and from finger to finger. The nail of the middle finger grows fastest, those on the thumb and little finger lag behind.

Women's Equality Day

The NASA and ACSC Federal Women's Program Committee invite you to join in celebrating Women's Equality Day with a luncheon featuring:

Carol Bosserman
League of Women Voters
Maryland Chapter

"Today's Active Voter"
11:30 a.m. August 25
Williamsburg Room Bldg. E-2

Menu consists of filet, baked potato, salad, vegetables and dessert

Call Linda Thompson, x1072, or Sandy Bowden, x1060.

Crab Steam

The Morale Activities Committee is sponsoring a crab steam on Friday, August 22 at 6 p.m. in Building F-3 — menu will consist of steamed crabs, corn on the cob and hush puppies. The cost is $5 per person.

We'd like to get an idea of how many folks are interested in attending so that we can estimate how many crabs we should buy.

Call Mike Martone, x2360 or e-mail: **Michael.Martone.1@gsfc.nasa.gov** and let him know if you want to attend and how many people will be coming with you.

Appreciate an early response so that we can get started on the preparations!!

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